

REMARKS

The above-identified patent application has been amended and Applicants respectfully request the Examiner to reconsider and again examine the claims as amended.

Claims 1, 4-18, 29-33, and 36-38, 40, and 41 are pending in the application. Claims 1, 4-11, 13-18, 29, 30, 32, 33, and 36-41 are rejected. Claims 12 and 31 are objected to. Claim 4 is amended herein. Claim 40 is also amended herein, but not for reasons of patentability, as will be apparent. Claim 39 is canceled herein without prejudice as being duplicative with Claim 1.

In the IDS

The Examiner indicates that, in an IDS filed February 13, 2008, "[t]he reference to 2007/026749 does not match any documents." Applicants believe this number to be incorrectly listed by the Applicants and withdraw this reference number from consideration.

The Rejections under 35 U.S.C. §102(b)

The Examiner rejects Claims 1, 4-7, 13, 14, 17, 18, 29, 30, 32, 33, 39-41 under 35 U.S.C. §102(b) as being anticipated by Ishida (EP Patent number EP 0867725).

Applicants submit that independent Claim 1 is patentably distinct over Ishida, since the cited reference neither describes nor suggests "... one or more magnetic field transducers disposed on the first surface of said substrate, wherein said substrate and said lead frame are relatively disposed in a flip-chip arrangement resulting in the current conductor portion being proximate to said one or more magnetic field transducers, and further resulting in an increased sensitivity of the integrated circuit to a magnetic field," as set forth in Claim 1.

The flip-chip arrangement is described throughout the specification, for example, in conjunction with FIG. 1. Applicants submit that it is notoriously well known that a flip-chip arrangement results in a lead frame above a circuit board to which it mounts and a substrate

above at least the base plate of the lead frame, wherein an active surface of the substrate is flipped, i.e., disposed downward toward the lead frame.

In contrast, the arrangement of Ishida does not teach a flip-chip at all. Ishida does not describe any arrangement between a substrate and a lead frame.

In view of the above, Applicants submit that Claim 1 is patentably distinct over Ishida.

Claims 4-7, 13, 14, 17, 18, and 40 depend from and thus include the limitations of Claim 1. Thus, Applicants submit that Claims 4-7, 13, 14, 17, 18, and 40 are patentably distinct over the cited reference at least for the reasons discussed above in conjunction with Claim 1.

Claim 39 is canceled herein without prejudice.

Applicants submit that Claim 4 is further patentably distinct over Ishida, since the cited reference neither describes nor suggests “...the current conductor portion further comprises a conductive clip directly and electrically coupled to the at least two of the plurality of leads,” as set forth in Claim 4. This arrangement is shown, for example, in FIG. 7. The Examiner uses element 2 (magnetic substance) of Ishida to teach a conductive clip, but element 2 is not directly coupled to leads 4 of Ishida.

Applicants submit that Claim 7 is further patentably distinct over Ishida, since the cited reference neither describes nor suggests “...a thickness of the conductive clip is selected in accordance with a current passing through the conductive clip,” as set forth in Claim 7. Again, the Examiner uses element 2 (magnetic substance) of Ishida to teach a conductive clip. However, Applicants submit that no current flows through the magnetic substance 2 of Ishida.

Applicants submit that Claim 13 is further patentably distinct over Ishida, since the cited reference neither describes nor suggests “...at least a part of the current conductor portion has a

thinned rectangular cross section having a minimum dimension less than a thickness of other portions of said lead frame, the thinned rectangular cross section taken through a thickness direction of the current conductor portion, the thinned rectangular cross section resulting in an increased magnetic field proximate to the current conductor portion, and therefore, proximate to said one or more magnetic field transducers,” as set forth in Claim 13. The Examiner apparently uses element 1 (conductor) of Ishida to teach a lead frame having a thinned section 1a. Applicants submit that the conductor 1 of Ishida is not a lead frame at all.

As described in on-line Wikipedia at
[http://en.wikipedia.org/wiki/Fabrication_\(semiconductor\)](http://en.wikipedia.org/wiki/Fabrication_(semiconductor)):

Plastic or ceramic packaging involves mounting the die, connecting the die pads to the pins on the package, and sealing the die. Tiny wires are used to connect pads to the pins. In the old days, wires were attached by hand, but now purpose-built machines perform the task. Traditionally, the wires to the chips were gold, leading to a “lead frame” (pronounced “leed frame”) of copper, that had been plated with solder, a mixture of tin and lead. Lead is poisonous, so lead-free “lead frames” are now the best practice.

Applicants submit that the term lead frame is notoriously well known in the semiconductor industry. Applicants submit that the term lead frame should be construed in accordance with its ordinary meaning.

Applicants also respectfully direct the Examiner’s attention to Claim 1, from which Claim 13 depends, and which recites “at least some of the leads of said lead frame are electrically coupled to said substrate.” Thus, the conductor 1 of Ishida cannot be a lead frame as recited in the claims.

Applicants submit that Claim 40 is further patentably distinct over Ishida, since the cited reference neither describes nor suggests “...each one of the leads has a bend in a direction selected to result in each one of the leads being closer to the first surface of said substrate than to the second surface of said substrate throughout a length of the lead,” as set forth in Claim 40.

Applicants remind the Examiner that the first surface of the substrate is the surface upon which the one or more magnetic field transducers are disposed. The Examiner uses FIG. 5 of Ishida to teach the claimed arrangement. However, Applicants submit that Ishida does not teach a position of leads relative to a substrate at all.

Applicants submit that independent Claim 29 is patentably distinct over Ishida, since the cited reference neither describes nor suggests "...a lead frame having a plurality of leads and having a current conductor portion comprising a coupling of at least two of the plurality of leads, wherein the coupling of at least two of the plurality of leads comprises a loop, the at least two of the leads and the loop forming a continuous electrical path entirely formed of lead frame material," as set forth in Claim 29. The Examiner uses element 1 (conductor) of Ishida to teach a lead frame. As described above in conjunction with Claim 13, Applicants submit that the conductor 1 of Ishida is not a lead frame at all.

In view of the above, Applicants submit that Claim 29 is patentably distinct over Ishida.

Claims 30, 32, 33, and 41 depend from and thus include the limitations of Claim 29. Thus, Applicants submit that Claims 30, 32, 33, and 41 are patentably distinct over the cited reference at least for the reasons discussed above in conjunction with Claim 29.

For reasons described above in conjunction with Claim 13, Applicants submit that Claim 32 is further patentably distinct over Ishida, since the cited reference neither describes nor suggests "...at least a part of the current conductor portion has a thinned rectangular cross section having a smallest dimension less than a thickness of other portions of said lead frame, the thinned rectangular cross section taken through a thickness direction of the current conductor portion, the thinned rectangular cross section resulting in an increased magnetic field proximate to the current conductor portion, and therefore, proximate to said one or more magnetic field transducers," as set forth in Claim 32.

For reasons described above in conjunction with Claim 40, Applicants submit that Claim 33 is further patentably distinct over Ishida, since the cited reference neither describes nor suggests “...each one of the leads has a bend in a direction selected to result in each one of the leads being closer to the first surface of said substrate than to the second surface of said substrate throughout a length of the lead,” as set forth in Claim 33.

For reasons described above in conjunction with Claim 1, Applicants submit that Claim 41 is further patentably distinct over Ishida, since the cited reference neither describes nor suggests “said substrate and said lead frame are relatively disposed in a flip-chip arrangement resulting in the current conductor portion being proximate to said one or more magnetic field transducers, and further resulting in an increased sensitivity of the integrated circuit to a magnetic field,” as set forth in Claim 41.

In view of the above, Applicants submit that the rejection of Claims 1, 4-7, 13, 14, 17, 18, 29, 30, 32, 33, 39-41 under 35 U.S.C. §102(b) should be removed.

The Rejections under 35 U.S.C. §103(a)

Ishida in View of Yangawa et al.

The Examiner rejects Claim 8 under 35 U.S.C. §103(a) as being unpatentable over Ishida in view of Yangawa et al. (U.S. Patent Publication number 2001/0028115).

Claim 8 depends from and thus includes the limitations of Claim 1. Thus, Applicants submit that Claim 8 is patentably distinct over the cited references at least for the reasons discussed above in conjunction with Claim 1.

In view of the above, Applicants submit that the rejection of Claim 8 under 35 U.S.C. §103(a) should be removed.

Ishida in View of Williams

The Examiner rejects Claims 9, 36, and 37 under 35 U.S.C. §103(a) as being unpatentable over Ishida in view of Williams (U.S. Patent Publication number 2005/0230843).

Claims 9, 36, and 37 depend from and thus include the limitations of Claim 1. Thus, Applicants submit that Claims 9, 36, and 37 are patentably distinct over the cited references at least for the reasons discussed above in conjunction with Claim 1.

In view of the above, Applicants submit that the rejection of Claims 9, 36, and 37 under 35 U.S.C. §103(a) should be removed.

Ishida in View of Meyer et al.

The Examiner rejects Claims 10, 11, 15, 16, and 38 under 35 U.S.C. §103(a) as being unpatentable over Ishida in view of Meyer et al. (U.S. Patent Publication number 2002/0179987).

Claims 10, 11, 15, 16, and 38 depend from and thus include the limitations of Claim 1. Thus, Applicants submit that Claims 10, 11, 15, 16, and 38 are patentably distinct over the cited references at least for the reasons discussed above in conjunction with Claim 1.

Applicants submit that Claim 10 is further patentably distinct over Ishida, whether taken alone or in combination with Meyer et al., since the cited reference neither describes nor suggests “...the current conductor portion has a current conductor portion axis and at least two of said one or more magnetic field transducers are disposed on opposite sides of the current conductor portion axis,” as set forth in Claim 10.

The Examiner asserts that “[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to include two or more magnetic field [transducers] with the structure of Ishida for the purpose of detecting an angle of rotation.” However, Applicants

submit that it is not the mere inclusion of two magnetic field transducers that is set forth in Claim 10, but it is their placement relative to a current conductor axis. Neither Ishida nor Meyer et al. contemplate the claimed arrangement.

Applicants submit that Claim 11 is further patentably distinct over Ishida, whether taken alone or in combination with Meyer et al., since the cited reference neither describes nor suggests “...at least two of said one or more magnetic field transducers are rotated relative to each other for providing predetermined voltage output polarities,” as set forth in Claims 11. Applicants submit that Ishida and Meyer et al. do not teach or suggest relative rotations of magnetic field transducers.

Applicants submit that Claim 38 is further patentably distinct over Ishida, whether taken alone or in combination with Meyer et al., since the cited reference neither describes nor suggests “...the current conductor portion has an edge bounding a surface of the current conductor portion, and wherein said one or more magnetic field transducers are disposed on the first surface of said substrate proximate to the current conductor portion and in a position such that neither the edge of the current conductor portion nor a surface of the current conductor portion overlaps said one or more magnetic field transducers,” as set forth in Claim 38. Applicants submit that the claimed relative placement of the one or more magnetic field transducers and the current conductor portion is not taught or suggested by Ishida or Meyer et al.

In view of the above, Applicants submit that the rejection of Claims 10, 11, 15, 16, and 38 under 35 U.S.C. §103(a) should be removed.

The Claim Objections

The Examiner objects to Claims 12 and 31 as being dependent upon a rejected base claim, but indicates that Claims 12 and 31 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claim.

For the above reasons, Applicants submit that independent Claim 1, from which Claim 12 depends, is patentably distinct over the cited references. Also for the above reasons, Applicants submit that independent Claim 29, from which Claim 31 depends, is patentably distinct over the cited references. Therefore, Applicants submit that Claims 12 and 31 are allowable in their present dependent form.

In view of the above Amendment and Remarks, Applicants submit that the claims and the entire case are in condition for allowance and should be sent to issue and such action is respectfully requested.

The Examiner is respectfully invited to telephone the undersigning attorney if there are any questions regarding this Amendment or this application.

The Assistant Commissioner is hereby authorized to charge payment of any additional fees associated with this communication or credit any overpayment to Deposit Account No. 500845, including but not limited to, any charges for extensions of time under 37 C.F.R. §1.136.

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Respectfully submitted,

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